

**DIRECT TESTIMONY
OF
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SOUTH BELOIT WATER, GAS AND ELECTRIC COMPANY

PETITION FOR APPROVAL OF DELIVERY SERVICES TARIFFS

DOCKET NO. 01-0629

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Witness Identification

1 **Q. Please state your name and business address.**

2 A. My name is Sheena Kight. My business address is 527 East Capitol Avenue,
3 Springfield, Illinois 62701.

4 **Q. By whom are you employed and in what capacity?**

5 A. I am employed by the Illinois Commerce Commission ("Commission") as a
6 Financial Analyst in the Finance Department of the Financial Analysis Division.

7 **Q. Please describe your qualifications and background.**

8 A. In May of 1998, I received a Bachelor of Business degree in Finance and Marketing
9 from Western Illinois University in Macomb, Illinois. I earned a Master of Business
10 Administration degree, with a concentration in Finance, also at Western Illinois
11 University in May 2001. I have been employed by the Commission in my present
12 position since January of 2001.

13 **Q. What is the purpose of your testimony in this proceeding?**

14 A. The purpose of my testimony and accompanying schedules is to present my
15 analysis of the cost of capital of, and recommend an overall rate of return for, the

16 electric delivery service operations of South Beloit Water, Gas and Electric
17 ("SBWGE"). I will also respond to the direct testimony of Mr. Enrique Bacalao on the
18 issue of cost of common equity.

Cost of Capital

19 **Q. Please summarize your cost of capital findings.**

20 A. The overall cost of capital for SBWGE equals 9.26%, as shown on Schedule 2.01.

21 **Q. Why must one determine an overall cost of capital for a public utility?**

22 A. Under the traditional regulatory model, the proper balance of ratepayer and
23 shareholder interests occurs when the Commission authorizes a public utility a rate
24 of return on its rate base equal to its overall cost of capital. If the authorized rate of
25 return on rate base exceeds the overall cost of capital, then ratepayers bear the
26 burden of excessive prices. Conversely, if the authorized rate of return on rate base
27 is lower than the overall cost of capital, then the utility may be unable to raise capital
28 at a reasonable cost. Ultimately, the utility's inability to raise sufficient capital would
29 impair service quality. Therefore, ratepayer interests are served best when the
30 authorized rate of return on rate base equals the overall cost of capital.

31 In authorizing a rate of return on rate base equal to the overall cost of capital, all
32 costs of service are assumed reasonable and accurately measured. If
33 unreasonable costs continue to be incurred, or if any reasonable cost of service
34 component is measured inaccurately, then the allowed rate of return on rate base
35 will not balance ratepayer and investor interests.

36 **Q. Please define the overall cost of capital for a public utility.**

37 A. The overall cost of capital equals the sum of the component costs of the capital
38 structure (i.e., debt, preferred stock, and common equity) after each is weighted by
39 its proportion to total capital. It represents the rate of return the utility needs to earn
40 on its assets to satisfy contractual obligations to, or the market requirements of, its
41 investors.

Capital Structure

42 **Q. What capital structure does SBWGE propose for setting rates?**

43 A. SBWGE proposes using Wisconsin Power and Light Company's ("WP&L")
44 December 31, 2000, capital structure, comprised of 43.54% long-term debt,

45 4.685% preferred stock, and 51.775% common equity, as shown on Schedule
46 2.01.¹

47 **Q. Do you agree with using WP&L's capital structure for determining SBWGE's**
48 **cost of capital?**

49 A. Yes. SBWGE is a direct subsidiary of WP&L and obtains all of its capital from
50 WP&L. Since WP&L is the sole source of capital for SBWGE, and since capital
51 cannot be traced from source to use (i.e., particular debt and equity issues cannot
52 be ascribed to SBWGE assets), WP&L and SBWGE's capital structures are one
53 and the same from a financial standpoint.

54 **Q. What capital structure do you recommend?**

55 A. I recommend adopting WP&L's December 31, 2000 capital structure comprised of
56 43.49% long-term debt, 4.71% preferred stock, and 51.80% common equity, as
57 shown on Schedule 2.01.

58 **Q. Please describe the adjustments you made to SBWGE's preferred stock**
59 **balance.**

60 A. I added the unamortized premium on preferred stock to the balance of preferred
61 stock, as shown on Exhibit 2.03. The adjustment results in a total balance of
62 preferred stock of \$60,218,000.

¹ SBWGE's response to Staff data request FIN-1, DST.4010 Schedule D-1.

63 **Q. What is SBWGE's balance of long-term debt?**

64 A. SBWGE long-term debt balance as of December 31, 2000 was \$556,224,543.

65 **Q. Does capital structure affect the overall cost of capital?**

66 A. Yes. Financial theory suggests capital structure affects the value of a firm and,
67 therefore, its cost of capital, to the extent it affects the expected level of cash flows
68 that accrue to third parties (i.e., other than debt and stock holders). Employing debt
69 as a source of capital reduces a company's income taxes,² thereby reducing the
70 cost of capital; however, as reliance on debt as a source of capital increases, so
71 does the probability of bankruptcy. As bankruptcy becomes more probable,
72 expected payments to attorneys, trustees, accountants and other third parties
73 increase. Simultaneously, the expected value of the income tax shield provided by
74 debt financing declines. Beyond a certain point, a growing dependence on debt as
75 a source of funds increases the overall cost of capital. Therefore, the Commission
76 should not determine the overall rate of return from a utility's actual capital structure
77 if it determines that the capital structure adversely affects the overall cost of capital.

78 An optimal capital structure would minimize the cost of capital and maintain a
79 utility's financial integrity. Unfortunately, determining whether a capital structure is

² The tax advantage debt has over equity at the corporate level is partially offset at the individual investor level. Debt investors receive returns largely in the form of current income (i.e., interest). In contrast, equity investors receive returns in the form of both current income (i.e., dividends) and capital appreciation (i.e., capital gains). Taxes on capital gains are lower than taxes on interest and dividend income because capital gains tax rates are lower and taxes on capital gains are deferred until realized.

80 optimal remains problematic because (1) the cost of capital is a continuous function
81 of the capital structure, rendering its precise measurement along each segment of
82 the range of possible capital structures problematic; (2) the optimal capital structure
83 is a function of operating risk, which is dynamic; and (3) the relative costs of the
84 different types of capital vary with dynamic market conditions. Consequently, one
85 should determine whether the capital structure is consistent with the financial
86 strength necessary to access the capital markets under all conditions, and if so,
87 whether the cost of that financial strength is reasonable.

88 Towards that end, I compared the Company's December 31, 2000, capital structure
89 to industry standards. Standard & Poor's ("S&P") categorizes debt securities on
90 the basis of the risk that a company will default on its interest or principal payment
91 obligations. The resulting credit rating reflects both the operating and financial risks
92 of a utility.³ Electric utilities that have a 'AA-' credit rating have a mean total debt
93 ratio of 45.95%.^{4,5} Gas distribution utilities that have a 'AA-' credit rating have a
94 mean total debt ratio of 50.43%. The mean common equity ratio for AA-rated
95 electric utilities equals 50.45%. The mean common equity ratio for S&P AA-rated
96 gas distribution utilities equals 49.04%. The above numbers are shown in Table 1
97 below for comparative purposes.

³ *Standard & Poor's Utility Financial Statistics*, June 1999, p. 3; Standard & Poor's Utilities Rating Service: Industry Commentary, May 20, 1996, p. 1.

⁴ WP&L's credit rating was AA- as of October 14, 2001.

⁵ *S&P Utility Compustat*.

	AA- rated Electric Utilities	AA- rated Gas Distributors	WP&L/SBWGE December 31, 2000
Total Debt Ratio	45.95%	50.43%	43.49%
Equity Ratio	50.45%	49.04%	51.80%

WP&L/SBWGE's December 31, 2000, total debt and equity ratios are reasonably similar to the mean total debt and equity ratios for S&P AA- rated electric utilities and gas distributors. The common equity ratio, while on the high end, is not excessive in comparison to the mean common equity ratio for S&P AA- rated electric utilities and gas distributors. According to S&P, an obligor rated 'AA' has a very strong capacity to meet its financial commitments but to a lesser degree than higher-rated obligors.⁶ The above suggests that the December 31, 2000 capital structure for SBWGE is commensurate with a very strong but not excessive degree of financial strength. Therefore, my capital structure proposal, comprising 43.49% long-term debt, 4.71% preferred stock, and 51.80% common equity, is appropriate for establishing rates. That capital structure appears on Schedule 2.01.

Q. Standard and Poor's currently rates WP&L A.⁷ Why did you compare the WP&L/SBWGE capital ratios to those of AA- rated utilities?

⁶ *Standard & Poor's Utility Financial Statistics*, June 1999, p. 4.

⁷ Ferara, William, "Wisconsin Power and Light Company", www.ratingsdirect.standardandpoors.com, November 13, 2001

111 A. On October 15, 2001 Standard and Poor's downgraded WP&L to A from AA-. The
112 downgrade was a result of WP&L's parent company, Alliant Energy Corporation's
113 ("Alliant") "increased focus on expanding its higher-risk nonregulated businesses."⁸

114 Section 9-230 of the Illinois Public Utilities Act (220 ILCS 5/9-230 *et seq.*, "Act")
115 states that:

116 In determining a reasonable rate of return upon investment for any
117 public utility in any proceeding to establish rates or charges, the
118 Commission shall not include any incremental risk or increased cost
119 of capital which is the direct or indirect result of the public utility's
120 affiliation with unregulated or non-utility companies.

121 Therefore, it would be inappropriate to base SBWGE's allowed rate of return
122 on the basis of its A credit rating since that credit rating is due to its
123 affiliation with unregulated or non-utility companies.

124 **Q. Should short-term debt be included in the capital structure of SBWGE?**

125 A. No. Short-term debt is not currently a source of financing for SBWGE's rate base
126 investments.

127 **Cost of Long-Term Debt**

128 **Q. What is the embedded cost of long-term debt for SBWGE?**

⁸ Ferara, William, "Ratings on Alliant Energy Corp. and Subsidiaries Lowered",

129 A. As of December 31, 2000, the embedded cost of long-term debt was 7.57%, as
130 shown on Schedule 2.02.

131 **Q. Please describe the adjustments you made to the cost of SBWGE's long-**
132 **term debt.**

133 A. I used straight-line amortization to figure the unamortized discount and issue
134 expense and the annualized discount and issue expense. Also, I used the current
135 variable rate being paid on WP&L's First Mortgage Bonds Series 1984A, 1988A,
136 1991A, and 1991B.

137 **Cost of Preferred Stock**

138 **Q. What is the embedded cost of preferred stock for SBWGE?**

139 A. SBWGE's embedded cost of preferred stock is 6.81%, as shown on Schedule
140 2.03.⁹ Including premium on capital stock in the balance of preferred stock resulted
141 in a slightly lower cost than the Company presented.

www.ratingsdirect.standardandpoors.com, October 17, 2001

⁹ SBWGE's FERC Form 1 Annual Report for the year ended December 31, 2000. p 250-252

142

Cost of Common Equity

143 **Q. What is SBWGE's cost of common equity?**

144 A. My analysis indicates that the cost of common equity for SBWGE's electric delivery
145 service operations is 11.02%.

146 **Q. How did you measure the investor-required rate of return on common**
147 **equity for SBWGE's electric delivery service operations?**

148 A. I measured the investor-required rate of return on common equity for SBWGE's
149 electric delivery service operations with the discounted cash flow ("DCF") and risk
150 premium models. Since SBWGE does not have market-traded common stock,
151 DCF and risk premium models cannot be applied directly to SBWGE, therefore, I
152 applied both models to a sample of integrated electric utility companies and a
153 sample of gas distribution companies. Rate of return witnesses in other
154 proceedings have suggested that the risks of gas and electric distribution
155 companies are similar.¹⁰ I have included a gas distribution sample as well.

¹⁰ ComEd Exhibit No. 8.0, Direct Testimony of Daniel E. Thone, Docket No. 01-0423, June 1, 2001, p. 7.; MidAmerican Exhibit No. 4.0, Direct Testimony of Dr. Roger A. Morin, PhD, Docket No. 01-0444, June 8, 2001, pp. 5, 19-21.

156

Sample Selection

157 **Q. How did you select an electric sample?**

158 A. Since this proceeding will set rates for electric delivery services, under ideal
159 circumstances the sample should reflect the risks associated with the provision of
160 those services. Unfortunately, few, if any, market-traded electric utilities in the
161 United States provide only electric delivery services. Therefore, I selected an
162 electric sample based on the following criteria. First, I began with a list of all
163 domestic publicly traded companies assigned an industry number of 4911 or 4931
164 (i.e., electric utilities) within *Standard & Poor's Utility Compustat*. Second, I
165 removed any company that derived less than 70% of its revenue from electric
166 services, based on 2000 data. Third, I removed any company that had an S&P debt
167 rating other than AA+, AA, AA-, A+, or A. Fourth, I removed any company that had
168 neither Zacks Investment Research ("Zacks") nor Institutional Brokers Estimate
169 System ("IBES") long-term growth rates. Fifth, I removed companies involved in
170 pending significant mergers or acquisitions. Sixth, I removed companies without
171 Value Line beta estimates. The remaining companies, Allegheny Energy Inc.,
172 Ameren Corp., Consolidated Edison, FPL Group Inc., Idacorp Inc., and NSTAR,
173 compose my Electric sample.

174 **Q. How did you select a gas sample?**

175 A. First, I began with a list of all domestic publicly traded companies assigned an
176 industry number of 4924 within *Standard & Poor's Utility Compustat*. Second, I
177 removed any company that derived less than 70% of its revenue from gas services,
178 based on 2000 data. Third, I removed any company that had an S&P debt rating
179 outside the range of AA+ through A. Fourth, I removed any company that had
180 neither Zacks nor IBES long-term growth rates. Fifth, I removed companies involved
181 in pending significant mergers or acquisitions. Finally, I removed companies
182 without Value Line beta estimates. The remaining companies, Laclede Gas Co.,
183 Nicor Inc., Northwest Natural Gas Co., Peoples Energy Corp., Piedmont Natural
184 Gas Co., and WGL Holdings Inc., compose my Gas sample.

185 **Q. Please discuss the criteria by which you selected your samples.**

186 A. The percentage of revenues from electric or gas sales is an operating risk measure.
187 S&P credit ratings measure the risk that a company will default on financial
188 obligations, and are a function of both operating and financial risk.¹¹ By limiting the
189 sample to companies with a high percentage of revenue from electric or gas sales
190 and S&P credit ratings similar to that of WP&L's pre-October 15, 2001 credit rating,
191 the samples together should approach the risk of the electric delivery services
192 operations of SBWGE while excluding the risks associated with WP&L and
193 SBWGE's affiliation with non-utility and unregulated companies. In addition,

¹¹ Standard & Poor's, *Utilities Rating Service: Financial Statistics, Twelve Months Ended June 30, 1998*, p. 1; Standard & Poor's, *Utilities Rating Service: Industry Commentary*, May 20, 1996, p. 1.

194 removing companies that have pending significant mergers ensures that merger
195 premiums do not distort the results of my analysis.

196 **Q. In past rate cases Staff has utilized a general utility sample selected on the**
197 **basis of a quantitative comparison in risk to the utility. Did you include such**
198 **a sample in your analysis?**

199 A. No. Recent industry restructuring has rendered questionable the measurement of
200 financial and operating risk with historical data for many electric utilities.

201 **DCF Analysis**

202 **Q. Please describe DCF analysis.**

203 A. For a utility to attract common equity capital, it must provide a rate of return on
204 common equity sufficient to meet investor requirements. DCF analysis establishes
205 a rate of return directly from investor requirements. A comprehensive analysis of a
206 utility's operating and financial risks becomes unnecessary to implement a DCF
207 analysis since the market price of a utility's stock already embodies the market
208 consensus of those risks.

209 According to DCF theory, a security price equals the present value of the cash flow
210 investors expect it to generate. Specifically, the market value of common stock

equals the cumulative value of the expected stream of future dividends after each is discounted by the investor-required rate of return.

Q. Please describe the DCF model with which you measured the investor-required rate of return on common equity.

A. As it applies to common stocks, DCF analysis is generally employed to determine appropriate stock prices given a specified discount rate. Since a DCF model incorporates time-sensitive valuation factors, it must correctly reflect the timing of the dividend payments that stock prices embody. As such, incorporating stock prices that the financial market sets on the basis of quarterly dividend payments into a model that ignores the time value of quarterly cash flows constitutes a misapplication of DCF analysis.

The companies in both samples pay dividends quarterly; therefore, I applied a constant-growth DCF model that measures the annual required rate of return on common equity as follows:

$$k = \frac{\sum_{q=1}^4 D_{0,q} (1+g)(1+k)^{1-[x+0.25(q-1)]}}{P} + g.$$

where $P \equiv$ the current stock price;

$D_{0,q} \equiv$ the last dividend paid at the end of quarter q , where $q = 1$ to 4;

242 A. A current stock price reflects all information that is available and relevant to the
243 market; thus, it represents the market's assessment of the common stock's current
244 value. I measured each company's current stock price with its closing market price
245 from November 14, 2001. Those stock prices appear on Schedule 2.05.

246 Since current stock prices reflect the market's current expectation of the cash flows
247 the securities will produce and the rate at which those cash flows are discounted, an
248 observed change in the market price does not necessarily indicate a change in the
249 required rate of return on common equity. Rather, a price change may reflect
250 investors' re-evaluation of the expected dividend growth rate. In addition, stock
251 prices change with the approach of dividend payment dates. Consequently, when
252 estimating the required return on common equity with the DCF model, one should
253 measure the expected dividend yield and the corresponding expected growth rate
254 concurrently. Using an historical stock price along with current growth expectations
255 or combining an updated stock price with past growth expectations would likely
256 produce an inaccurate estimate of the market-required rate of return on common
257 equity.

258 **Q. Please explain the significance of the column titled "Next Dividend Payment**
259 **Date" shown on Schedule 2.05.**

260 A. Estimating year-end dividend values requires measuring the length of time between
261 each dividend payment date and the first anniversary of the stock observation date.

262 For the first dividend payment, that length of time is measured from the “Next
263 Dividend Payment Date.” Subsequent dividend payments occur in quarterly
264 intervals.

265 **Q. How did you estimate the next four expected quarterly dividends?**

266 A. Most utilities declare and pay the same dividend per share for four consecutive
267 quarters before adjusting the rate. Consequently, I assumed the dividend rate will
268 adjust during the same quarter it changed during the preceding year. If the utility did
269 not change its dividend during the last year, I assumed the rate would change during
270 the next quarter. The average expected growth rate was applied to the current
271 dividend rate to estimate the expected dividend rate. Schedule 2.05 presents the
272 current quarterly dividends. Schedule 2.06 presents the expected quarterly
273 dividends.

274 **Q. Based on your DCF analysis, what are the estimated required rates of return**
275 **on common equity for the electric sample and the gas sample?**

276 A. The DCF analysis estimated required rates of return on common equity of 12.58%
277 for the Electric sample and 11.35% for the Gas sample, as shown on Schedule
278 2.07. Those results represent averages of the DCF estimates for the individual
279 companies in each sample, which are derived from the growth rates presented on

280 Schedule 2.04, the stock price and dividend payment dates presented on Schedule
281 2.05, and the expected quarterly dividends presented on Schedule 2.06.

282 **Risk Premium Analysis**

283 **Q. Please describe the risk premium model.**

284 A. The risk premium model is based on the theory that the market-required rate of
285 return for a given security equals the risk-free rate of return plus a risk premium
286 associated with that security. A risk premium represents the additional return
287 investors expect in exchange for assuming the risk inherent in an investment.
288 Mathematically, a risk premium equals the difference between the expected rate of
289 return on a risk factor and the risk-free rate. If the risk of a security is measured
290 relative to a portfolio, then multiplying that relative measure of risk and the portfolio's
291 risk premium produces a security-specific risk premium for that risk factor.

292 The risk premium methodology is consistent with the theory that investors are risk-
293 averse. That is, investors require higher returns to accept greater exposure to risk.
294 Thus, if investors had an opportunity to purchase one of two securities with equal
295 expected returns, they would purchase the security with less risk. Conversely, if
296 investors had an opportunity to purchase one of two securities with equal risk, they
297 would purchase the security with the higher expected return. In equilibrium, two
298 securities with equal quantities of risk have equal required rates of return.

299 The Capital Asset Pricing Model (“CAPM”) is a one-factor risk premium model that
300 mathematically depicts the relationship between risk and return as:

301
$$R_j = R_f + b_j \times (R_m - R_f)$$

where $R_j \equiv$ the required rate of return for security j ;

$R_f \equiv$ the risk-free rate;

$R_m \equiv$ the expected rate of return for the market portfolio; and

$b_j \equiv$ the measure of market risk for security j .

302 In the CAPM, the risk factor is market risk which is defined as risk that cannot be
303 eliminated through portfolio diversification. To implement the CAPM, one must
304 estimate the risk-free rate of return, the expected rate of return on the market
305 portfolio, and a security or portfolio-specific measure of market risk.

306 **Q. How did you estimate the risk-free rate of return?**

307 A. I examined the suitability of the yields on three-month U.S. Treasury bills and thirty-
308 year U.S. Treasury bonds as estimates of the risk-free rate of return.

309 **Q. Why did you examine the yields on U.S. Treasury bills and bonds as**
310 **measures of the risk-free rate?**

311 A. The proxy for the nominal risk-free rate should contain no risk premium and reflect
312 similar inflation and real risk-free rate expectations to the security being analyzed

313 through the risk premium methodology.¹² The yields of fixed income securities
314 include premiums for default and interest rate risk. Default risk pertains to the
315 possibility of default on principal or interest payments. Securities of the United
316 States Treasury are virtually free of default risk by virtue of the federal government's
317 fiscal and monetary authority. Interest rate risk pertains to the effect of unexpected
318 interest rate fluctuations on the value of securities.

319 Since common equity theoretically has an infinite life, its market-required rate of
320 return reflects the inflation and real risk-free rates anticipated to prevail over the long
321 run. U.S. Treasury bonds, the longest term treasury securities, are issued with
322 terms to maturity of thirty years; U.S. Treasury notes are issued with terms to
323 maturity ranging from two to ten years; U.S. Treasury bills are issued with terms to
324 maturity ranging from ninety-one days to one year. Therefore, U.S. Treasury bonds
325 are more likely to incorporate within their yields the inflation and real risk-free rate
326 expectations that drive, in part, the prices of common stocks than either U.S.
327 Treasury notes or Treasury bills.

328 However, due to relatively long terms to maturity, U.S. Treasury bond yields also
329 contain an interest rate risk premium that diminishes their usefulness as measures
330 of the risk-free rate. U.S. Treasury bill yields contain a smaller premium for interest
331 rate risk. Thus, in terms of interest rate risk, U.S. Treasury bill yields more
332 accurately measure the risk-free rate.

¹² Real risk-free rate and inflation expectations comprise the non-risk portion of a security's rate of return.

333 **Q. Given that the inflation and real risk-free rate expectations reflected in the**
334 **yields on U.S. Treasury bonds and the prices of common stocks are similar,**
335 **does it necessarily follow that the inflation and real risk-free rate**
336 **expectations that are reflected in the yields on U.S. Treasury bills and the**
337 **prices of common stocks are dissimilar?**

338 **A.** No. To the contrary, short and long-term inflation and real risk-free rate
339 expectations, including those that are reflected in the yields on U.S. Treasury bills,
340 U.S. Treasury bonds, and the prices of common stocks, should equal over time.
341 Any other assumption implausibly implies that the real risk-free rate and inflation are
342 expected to systematically and continuously rise or fall.

343 Although expectations for short and long-term real risk-free rates and inflation
344 should equal over time, in finite time periods, short and long-term expectations may
345 differ. Short-term interest rates tend to be more volatile than long-term interest
346 rates.¹³ Consequently, over time U.S. Treasury bill yields are less biased (i.e., more
347 accurate) but less reliable (i.e., more volatile) estimators of the long-term risk-free
348 rate than U.S. Treasury bond yields. In comparison, U.S. Treasury bond yields are
349 more biased (i.e., less accurate) but more reliable (i.e., less volatile) estimators of
350 the long-term risk-free rate. Therefore, an estimator of the long-term nominal risk-
351 free rate should not be chosen mechanistically. Rather, the similarity in current short
352 and long-term nominal risk-free rates should be evaluated. If those risk-free rates

are similar, then U.S. Treasury bill yields should be used to measure the long-term nominal risk-free rate. If not, some other proxy or combination of proxies should be used.

Q. What are the current yields on three-month U.S. Treasury bills and thirty-year U.S. Treasury bonds?

A. Three-month U.S. Treasury bills are currently yielding 1.89%. Thirty-year U.S. Treasury bonds are currently yielding 5.08%. Both estimates are derived from quotes for November 14, 2001.¹⁴ Schedule 2.08 presents the published quotes and effective yields.

Q. Of the U.S. Treasury bill and bond yields, which is currently a better proxy for the long-term risk-free rate?

A. In terms of the gross domestic product ("GDP") price index, DRI-WEFA forecasts the inflation rate will average 3.0% annually during the 2001-2026 period.¹⁵ In terms of the consumer price index ("CPI"), the *Survey of Professional Forecasters* ("Survey") forecasts the inflation rate will average 2.6% during the next ten years.¹⁶ In terms of real GDP growth, DRI-WEFA forecasts the real risk-free rate will

¹³ Fabozzi and Pollack, ed., *The Handbook of Fixed Income Securities*, Fourth Edition, Irwin, p. 789.

¹¹ The Federal Reserve Board, *Federal Reserve Statistical Release: Selected Interest Rates, H.15 Daily Update*, <http://www.federalreserve.gov/releases/H15/update/>, November 14, 2001.

¹⁵ *The U.S. Economy: The 25-Year Focus*, DRI-WEFA, Summer Issue 2001, pp. A.60 and A.63.

average 2.9% during the 2001-2026 period.¹⁷ The Survey forecasts real GDP growth will average 3.3% during the next ten years.^{18, 19} Those forecasts imply a long-term, nominal risk-free rate between 6.0% and 6.3%.²⁰ Therefore, DRI-WEFA and Survey forecasts of inflation and real GDP growth expectations indicate that the U.S. Treasury bond yield more closely approximates the long-term risk-free rate at this time. It should be noted, however, that the estimate from using the U.S. Treasury bond yield contains an upward bias due to the inclusion of an interest rate risk premium associated with its relatively long term to maturity.

Q. Please explain why the real risk-free rate and the GDP growth rate should be similar.

A. Risk-free securities provide a rate of return sufficient to compensate investors for the time value of money, which is a function of production opportunities, time preferences for consumption, and inflation.²¹ In contrast, the real risk-free rate does not include a premium for inflation. The real GDP growth rate measures output of

¹⁶ *Survey of Professional Forecasters*, Federal Reserve Bank of Philadelphia, www.phil.frb.org/files/spf/survq101.html, August 23, 2001. The *Survey* aggregates the forecasts of approximately thirty forecasters.

¹⁷ *The U.S. Economy: The 25-Year Focus*, DRI-WEFA, Summer Issue 2001, pp. A.8-A.9.

¹⁸ *Survey of Professional Forecasters*, Federal Reserve Bank of Philadelphia, www.phil.frb.org/files/spf/survq101.html, February 20, 2001.

¹⁹ Historically, the realized interest rate return premium averaged 1.4% during the last 75 years (Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation, 2001 Yearbook*, p. 174).

²⁰ Nominal interest rates are calculated as follows:

$$r = (1 + R) \times (1 + i) - 1.$$

Where

r ≡ nominal interest rate;
 R ≡ real interest rate; and
 i ≡ inflation rate.

²¹ Brigham and Houston, *Fundamentals of Financial Management*, 8th edition.

goods and services excluding inflation and, as such, also reflects both production and consumers' consumption preferences. Therefore, both the real GDP growth rate and the real risk-free rate of return should be similar since both are a function of production opportunities and consumption preferences without the effects of a risk premium or an inflation premium.

Q. How was the expected rate of return on the market portfolio estimated?

A. The expected rate of return on the market was estimated by conducting a DCF analysis on the firms composing the S&P 500 Index ("S&P 500"). That analysis used dividends and closing market prices as of September 28, 2001 as reported in the October 2001 edition of *S&P Security Owner's Stock Guide*. Growth rate estimates were obtained from the September 2001 edition of *IBES Monthly Summary Data* and September 26, 2001 Zacks reports. Firms not paying a dividend as of September 28, 2001, or for which neither IBES nor Zacks growth rates were available were eliminated from the analysis. The resulting company-specific estimates of the expected rate of return on common equity were then weighted using market value data from Salomon Smith Barney, *Performance and Weights of the S&P 500: Third Quarter 2001*. The estimated weighted average expected rate of return for the remaining 359 firms, composing 81.86% of the market capitalization of the S&P 500, equals 15.30%.

402 **Q. Has any financial market uncertainty resulting from the September 11, 2001**
403 **terrorist attacks affected the accuracy of your estimate of the required rate**
404 **of return on the market?**

405 A. No. The required rate of return on the market equaled 15.31% as of June 28, 2001.
406 The small difference between the June 28 and September 28, 2001 estimates
407 suggests little, if any, unusual post-September 11, 2001 related impact on my
408 estimate of the market return.

409 **Q. How did you measure market risk on a security-specific basis?**

410 A. Beta measures risk in a portfolio context. When multiplied by the market risk
411 premium, a security's beta produces a market risk premium specific to that security.
412 I used Value Line's beta estimates for the companies in my samples. The Value
413 Line beta for a security is estimated with the following model using an ordinary
414 least-squares technique:²²

415
$$R_{j,t} = a_j + b_j \times R_{m,t} + e_{j,t}$$

where $R_{j,t} \equiv$ the return on security j in period t ,

$R_{m,t} \equiv$ the return on the market portfolio in period t ,

$a_j \equiv$ the intercept term for security j ;

$b_j \equiv$ beta, the measure of market risk for security j ; and

$e_{j,t} \equiv$ the residual term in period t for security j .

²² Statman, Meir, "Betas Compared: Merrill Lynch vs. Value Line", *The Journal of Portfolio Management*, Winter 1981.

A beta can be calculated for firms with market-traded common stock. Value Line calculates its betas in two steps. First, the returns of each company are regressed against the returns of the New York Stock Exchange Composite Index to estimate a raw beta. The regression analysis employs 260 weekly observations of stock return data. Then, an adjusted beta is estimated through the following equation:

$$b_{adjusted} = 0.35 + 0.67 \times b_{raw}.$$

From the individual betas of the companies in each sample a single average beta was computed for each sample to be input into the CAPM.

Q. Why do you use an adjusted beta estimate?

A. I use an adjusted beta estimate because empirical tests of the CAPM suggest that the linear relationship between risk, as measured by raw beta, and return is flatter than the CAPM predicts. That is, securities with raw betas less than one tend to realize higher returns than the CAPM predicts. Conversely, securities with raw betas greater than one tend to realize lower returns than the CAPM predicts. Adjusting the raw beta estimate towards the market mean value of 1.0 compensates for the observed flatness in the linear relationship between risk and return.²³ Securities with betas less than one are adjusted upwards thereby increasing the predicted required rate of return towards observed realized rates of return. Conversely, securities with betas greater than one are adjusted downwards

435 thereby decreasing the predicted required rate of return towards observed realized
436 rates of return. The adjustment represents an attempt to estimate a forward-looking
437 beta.

438 **Q. What are the beta estimates for the electric sample and the gas sample?**

439 A. The average Value Line adjusted beta for the Electric sample equals 0.51. The
440 average Value Line adjusted beta for the Gas sample equals 0.58.

441 **Q. What required rate of return on common equity does the risk premium**
442 **model estimate for the two samples?**

443 A. The risk premium model estimates a required rate of return on common equity of
444 10.28% for the Electric sample and 11.04% for the Gas sample. The computation
445 of those estimates appears on Schedule 2.08.

446 **Cost of Equity Recommendation**

447 **Q. Based on your entire analysis, what is your estimate of the required rate of**
448 **return on common equity for SBWGE's electric delivery services?**

²³ Litzenberger, Ramaswamy and Sosin, "On the CAPM Approach to the Estimation of A Public Utility's Cost of Equity Capital," *Journal of Finance*, May 1980, pp. 375-376.

449 A. A thorough analysis of the required rate of return on common equity requires both
450 the application of financial models and the analyst's informed judgment. An
451 estimate of the required rate of return on common equity based solely on judgment
452 is inappropriate. Nevertheless, because techniques to measure the required rate of
453 return on common equity necessarily employ proxies for investor expectations,
454 judgment remains necessary to evaluate the results of such analyses. Based on my
455 analysis, in my judgment the investor-required rate of return on common equity for
456 SBWGE's electric delivery services equals 11.02%.

457 **Q. Please summarize how you formed your recommendation for the investor-**
458 **required rate of return on common equity for SBWGE's electric delivery**
459 **services.**

460 A. My recommended rate of return on common equity, 11.02%, is the average of the
461 DCF and CAPM results for the Gas Sample. The models from which the individual
462 company estimates were derived are correctly specified and thus contain no source
463 of bias. Moreover, I am unaware of bias in my proxy for investor expectations.²⁴ In
464 addition, measurement error has been minimized through the use of a sample,
465 since estimates for a sample as a whole are subject to less measurement error than
466 individual company estimates.

²⁴ Except as discussed above in regard to U.S. Treasury bond yields as proxies for the long-term risk-free rate.

467 When using samples to estimate the cost of equity of a target company, the risk
468 level of the proxies should correspond to the risk level of the target company as
469 closely as possible. Therefore, I analyzed the S&P credit ratings and business
470 profile rankings of my sample groups to determine which more closely
471 approximates the risk level of SBWGE. An S&P credit rating is a measure of a
472 company's overall risk and the S&P business profile ranking is a measure of a
473 company's business risk.²⁵ As noted previously, the appropriate credit rating for
474 SBWGE is AA-. In addition, S&P states that regulated distribution systems
475 business profile assessments tend to fall within the 1-4 range.²⁶ Therefore, I
476 compared my samples as they relate to a company with a corporate credit rating of
477 AA- and a business profile of 3.²⁷ The Gas Sample has an average S&P credit
478 rating between A+ and AA- and an average business profile ranking of 3.17, which
479 indicates it is reasonably representative of SBWGE's electric delivery service
480 operations in terms of overall financial strength and business risk. In contrast, the
481 Electric Sample has an average S&P credit rating of A and an average business
482 profile ranking of 4.83, which indicates it is riskier than SBWGE's electric delivery
483 service operations in terms of overall financial strength and business risk.
484 Therefore, I based my recommended rate of return on common equity on an

²⁵ S&P assigns companies business profiles ranging from 1 to 10 based on business risk, with 1 being the lowest business risk and 10 being the highest. Standard & Poor's, *Utilities & Perspectives*, June 21, 1999.

²⁶ Standard and Poor's, *Corporate Ratings Criteria*, 1998, p. 32.

²⁷ WP&L was assigned an S&P business profile of 4, which reflects ownership of riskier generation assets. WP&L's electric delivery services operations, exclusive of its riskier generation assets, would almost certainly be higher. Thus, a business profile of 3 was utilized.

485 average of the DCF and CAPM estimates for my Gas Sample. Schedule 2.09
486 presents the S&P credit ratings and business position ratings of the samples.

487 **Overall Cost of Capital Recommendation**

488 **Q. What is the overall cost of capital for SBWGE?**

489 A. As shown on Schedule 2.01, SBWGE's overall cost of capital is 9.26%. The
490 recommended estimate incorporates a cost of common equity of 11.02%.

491 **Response to Mr. Bacalao**

492 **Q. Please summarize your evaluation of Mr. Bacalao's analyses of SBWGE's**
493 **cost of common equity.**

494 A. Mr. Bacalao measured SBWGE's investor required rate of return on common equity
495 with a historical and forecasted comparable earnings model, a discounted cash
496 flow (DCF) model, a risk premium model, and a capital asset pricing model
497 (CAPM). He applied each model to a general sample.

498 Mr. Bacalao's analyses contain several errors that lead him to incorrectly estimate
499 SBWGE's cost of common equity. The most significant flaws in Mr. Bacalao's
500 analyses of SBWGE's cost of common equity are the following:

- 501 1. Mr. Bacalao's sample is not representative of the risk inherent in SBWGE's
502 electric delivery service operations.
- 503 2. Mr. Bacalao's comparable earnings methodology does not provide valid
504 estimates of the investor-required rate of return on SBWGE's common
505 equity.
- 506 3. Mr. Bacalao's DCF analysis contains an unreasonable terminal growth rate.
- 507 4. Mr. Bacalao's risk premium model is based on the incorrect assumption that
508 historical risk premiums are reasonable estimates of current investor-
509 required risk premiums.
- 510 5. Mr. Bacalao's CAPM analysis is seriously flawed and does not accurately
511 reflect the cost of equity for his sample.

512 **Mr. Bacalao's Sample**

513 **Q. Please summarize how Mr. Bacalao determined his sample.**

514 A. Mr. Bacalao's sample was developed from Value Line's 1,700-company universe
515 by using Value Line's safety ranking as a screen.²⁸ Since Alliant Energy

²⁸ Prepared Direct Testimony of Enrique Bacalao pp. 13-15.

516 Corporation (“Alliant”) has a Value Line safety ranking of “2”, all firms with a safety
517 ranking of “2” were included in Mr. Bacalao’s general sample.

518 **Q. Is Mr. Bacalao’s use of the Value Line safety ranking appropriate for**
519 **selecting his sample?**

520 A. No. The Value Line safety ranking is an imprecise measure of risk and its use as a
521 screening technique is problematic as well. Value Line sorts its 1,700 company
522 universe of stocks by a composite index score and then divides those 1,700
523 companies into five very broad segments from 1 (safest) to 5 (riskiest). There are
524 150 stocks rated 1 for safety; 250 are rated 2, above average for safety; 900 are
525 rated 3, average for safety; 250 are rated 4, below average for safety; and 150 are
526 rated 5, lowest for safety.²⁹ Stocks that are close to one another, such as numbers
527 150 and 151, may be assigned different safety numbers while stocks ranked far
528 from each other, such as number 401 and 1300, may be assigned the same safety
529 number.³⁰ Therefore, stocks with different assigned safety numbers may be more
530 similar in risk than stocks ranked far apart with identical assigned safety numbers.

531 **Q. Are there any other shortcomings in Mr. Bacalao’s application of the Value**
532 **Line safety rank?**

²⁹ Value Line Investment Survey, *A Subscriber’s Guide*, p. 48.

³⁰ Arnold Bernhard, *Value Line Methods of Evaluating Common Stocks*, pp. 53 and 57.

533 A. Yes. SBWGE, as a non-publicly traded company, does not have a Value Line safety
534 rank. Therefore, Mr. Bacalao used the safety rank of Alliant, which is SBWGE's
535 ultimate parent company. Since Alliant has a subsidiary that is engaged in foreign
536 distribution and domestic generation businesses, Alliant's safety rank reflects non-
537 utility risks. In addition, since Value Line does not state to what degree that
538 subsidiary affects common equity risks, the implied safety rank of SBWGE's
539 electric delivery service operations on a stand-alone basis cannot be derived.³¹ If
540 Alliant's unregulated subsidiary affects its Value Line safety rank (as that subsidiary
541 has affected Alliant's credit rating), any cost of common equity estimate calculated
542 from a sample formed on that basis would reflect the risk of the unregulated affiliate.
543 Therefore, Mr. Bacalao's samples should not be considered when determining
544 SBWGE's cost of common equity for their electric delivery services.

545 **Q. Has the inclusion of non-utility companies impacted Mr. Bacalao's cost of**
546 **equity analyses?**

547 A. Yes. I do not have a breakdown of company DCF return between utility and non-
548 utility companies; however, the beta for Mr. Bacalao's entire sample equaled .77
549 while the betas for the electric and gas utilities within that sample averaged .52 and
550 .55, respectively. The higher the beta, the greater the cost of common equity.

³¹ Value Line Investment Survey Ratings & Reports, October 5, 2001, p. 697.

551

Comparable Earnings

552 **Q. Please summarize Mr. Bacalao's comparable earnings analysis.**

553 A. Mr. Bacalao used historical return on book equity as reported by Value Line for the
554 period 1991 to 2000 and forecasted Value Line estimates of return on book equity
555 for the years 2004 through 2006 for the companies in his samples to estimate
556 SBWGE's cost of equity. He claims that actual book returns provide a less biased
557 view of return levels.³²

558 **Q. Is the comparable earnings methodology appropriate for determining the**
559 **cost of common equity?**

560 A. No. The comparable earnings approach, which Mr. Bacalao relied upon to develop
561 two of his cost of common equity estimate for SBWGE's electric delivery service
562 operations in this proceeding, is badly flawed. The cost of common equity is the
563 market-required rate of return demanded by investors. In contrast, comparable
564 earnings analysis is not a market-based methodology. The comparable earnings
565 method incorrectly implies that the earned or expected rates of return on book
566 common equity are equivalent to the current investor-required rate of return.
567 However, there is simply no basis for this implication. Market-based cost of equity
568 methodologies reflect the investor-required rate of return since the market price of a

³² Prepared Direct Testimony of Enrique Bacalao, p.15.

569 common stock will not reach equilibrium until the expected rate of return on the
570 common stock equals the investor-required rate of return. In contrast, the return on
571 book equity has no such adjustment mechanism since its denominator, book value,
572 is immune to market forces.

573 **Q. Has the Commission rejected use of the comparable earnings analysis to**
574 **measure a utility's cost of equity?**

575 A. Yes. The Commission rejected use of the comparable earnings methodology in
576 Docket Nos. 99-0121, 89-0033, and 92-0448/93-0239 Consol.³³

577 **DCF Analysis**

578 **Q. Please summarize Mr. Bacalao's DCF analysis.**

579 A. Mr. Bacalao used an annual two-step DCF analysis. He used Zacks five-year
580 growth rates for the first stage. Mr. Bacalao used Ibbotson Associates' estimate of
581 the long-run annual rate of inflation to determine the terminal growth rate for the
582 second stage.

583 **Q. Please respond to Mr. Bacalao's criticisms of the DCF analysis.**

³³ Order, Docket 99-0121, August 25, 1999, p. 68; Order on Remand, Docket No. 89-0033, November 4, 1991, p.15; Order, Docket No. 92-0448/93-0239 Consol., October 11, 1994, p. 173.

584 A. Mr. Bacalao cites three reasons why the DCF model could produce unreasonable
585 estimates of the cost of equity: economic cycle, terminal growth rate, and business
586 cycle. I disagree that those three reasons invalidate the usefulness of DCF
587 analysis.

588 First, with regard to economic cycle, if earnings growth expectations are depressed
589 due to a recession, then stock prices will decline until the expected return equals the
590 investor required rate of return. Thus, regardless of economic cycle, a company's
591 stock price will reflect its investor's required rate of return.

592 Second, Mr. Bacalao uses an unreasonable terminal growth rate. Mr. Bacalao is
593 assuming that the company will only grow at the rate of inflation. This implausibly
594 implies the Company will not experience real growth. Thus, Mr. Bacalao's criticism
595 of the terminal growth rate is not applicable to the DCF model in general, but to his
596 implementation of that model.

597 Third, Mr. Bacalao argues the DCF model may produce unreasonable estimates of
598 the cost of equity depending on the business life cycle of the sample companies.
599 Clearly, the expected growth of a company is a function of business life cycle. For
600 example, a non-constant growth DCF model should be used for companies that are
601 experiencing rapid near-term growth. However, determining the growth rate for the
602 various growth stages for such an analysis is problematic as Mr. Bacalao's own

603 non-constant growth DCF analysis attests. Fortunately, a constant growth
604 assumption is generally valid for utility companies that operate in mature industries.

605 **Risk Premium Model**

606 **Q. Do you have any comments regarding Mr. Bacalao's risk premium analysis?**

607 A. Yes. Mr. Bacalao relied upon historical risk premiums in his risk premium analysis.
608 Historical risk premiums do not adequately measure investors' current return
609 requirements because historical risk premiums are based on realized returns. Due
610 to unpredictable movements in financial markets and the economy, the difference
611 between realized and expected returns can be substantial. Thus, historical
612 premiums are not reliable proxies of current or future risk premiums.

613 **Q. Has the Commission ruled on the use of historical data in determining a**
614 **company's cost of capital before?**

615 A. Yes. In Docket No. 92-0357, a rate proceeding for Iowa-Illinois Gas and Electric
616 Company, the Commission Order stated, "[t]he Commission notes that the investor-
617 required return on common equity is a forward-looking concept. Mr. Benore [the
618 company witness], in many instances, inappropriately utilized historical data to
619 determine the Company's cost of equity."³⁴ Similarly, in Docket No. 95-0076, a rate

³⁴ Order, Docket No. 92-0357, July 21, 1993, p. 66.

proceeding for Illinois-American Water Company, the Commission Order stated, “[t]he Commission also concludes that Staff’s criticism of Dr. Phillips’ use of two-month average historical stock prices and historical growth rates in his traditional DCF analysis, and historical risk premiums in his risk premium analysis are valid. Historical data is inappropriate in determining a forward-looking cost of equity because it contains information that may no longer be relevant to investors.”³⁵

CAPM Analysis

Leverage Adjustment

Q. Please summarize the leverage adjustments that Mr. Bacalao made to his CAPM analysis.

Mr. Bacalao modified the beta component of the CAPM to account for the effect of a company’s financial leverage on its risk. Mr. Bacalao removed the effect of financial leverage from his sample companies’ betas using market-value capital structures to obtain an unlevered beta and then re-levered it using the proposed book-value capital structure of SBWGE. Mr. Bacalao then used the re-levered betas for his sample companies when estimating the cost of equity with the CAPM methodology.³⁶

³⁵ Order, Docket No. 95-0076, December 20, 1995, p. 70.

³⁶ Prepared Direct Testimony of Enrique Bacalao pp. 16-17.

637 **Q. Please define the term financial leverage.**

638 A. Financial leverage is the amount of fixed financial obligations. The greater the
639 proportion of fixed financial obligations to capital, the greater the financial leverage.

640 **Q. Are the leverage adjustments as implemented by Mr. Bacalao appropriate**
641 **for his CAPM analysis?**

642 A. No. Re-levering the sample companies' betas to SBWGE's financial leverage
643 increases the implied risk of Mr. Bacalao's sample relative to SBWGE. Since
644 Value Line safety rank is a function of both operating risk and financial leverage,
645 many of the companies in the sample would no longer receive the same safety
646 ranking if their financial leverage was that of SBWGE. The electric companies in
647 Mr. Bacalao's sample had an average Value Line beta of .52 and a re-levered beta
648 of .51. The gas distribution companies in Mr. Bacalao's sample had an average
649 Value Line beta of .55 and a re-levered beta .56. The small difference between the
650 Value Line beta and the re-levered beta indicates that the electric and gas
651 distribution companies have financial leverage similar to SBWGE. In contrast, the
652 beta for the entire sample averages .77, and the relevered beta averages 1.00
653 indicating that the financial risk of the sample is lower than SBWGE. Therefore, if
654 the sample has the same total risk as SBWGE but lower financial risk (before the
655 beta adjustment) the operating risk of the entire sample must be higher. Thus, the
656 leverage adjustment might result in a sample with the same financial risk as

657 SBWGE, but operating risk would remain higher. That is, if the total risk of Mr.
658 Bacalao's sample was equal to that of SBWGE, then his beta adjustment surely
659 resulted in a sample with implied total risk that exceeds that for SBWGE.

660 **Q. If one assumes that a leverage adjustment is appropriate, did Mr. Bacalao**
661 **implement the leverage adjustments properly?**

662 A. No. Mr. Bacalao used the market value capital structures of the sample companies
663 to unlever the cost of equity estimates. When re-levering, Mr. Bacalao used
664 SBWGE's proposed book value capital structure. Essentially, Mr. Bacalao adjusted
665 his market-based CAPM models for application to book value.³⁷ Consistency is
666 important when implementing the leverage adjustment. Because SBWGE's
667 common stock is not market traded, its market value of common equity is
668 unobservable. Therefore, if Mr. Bacalao is to be consistent in his leveraging
669 adjustment, he should use an estimated market value capital structure for SBWGE.

670 **Q. Has the Commission ever rejected the use of financial leverage adjustments**
671 **to a utility's cost of equity?**

³⁷ Although it might appear as if book value capital structures imply a greater level of financial leverage than a market value capital structure, such an appearance would be misleading. Capital structure ratios are only indicators of financial leverage, rather than sources of financial leverage. Changing measurement units (i.e., from market values to book values) does not change the degree of financial leverage a firm employs.

672 A. Yes. The Commission rejected use of the leverage adjustments in Docket No. 99-
673 0120/99-0134 Consol. and 94-0065.³⁸

674 **Risk Premium**

675 **Q. Please describe the methods Mr. Bacalao used to determine the risk**
676 **premium component for the CAPM analysis.**

677 A. Mr. Bacalao averaged the Annual Total Returns of Large Company Stocks and
678 Small Company Stocks to determine the expected market return for his first two
679 CAPM calculations. He then subtracted out the risk-free rate to determine the risk
680 premium. The equity risk premium published by Ibbotson Associates was used to
681 determine the risk premium in his third and forth calculations.

682 **Q. Is Mr. Bacalao's risk premium estimate appropriate?**

683 A. No. Mr. Bacalao used the historical return on large and small-capitalization stocks
684 as a proxy for the current required return on the market. This is problematic for three
685 reasons. First historical risk premiums are unreliable proxies for expected return for
686 the reasons stated in the Commission Orders previously cited. Second, the return
687 on small-capitalization stocks is not representative of the stocks against which
688 betas are calculated. Beta is a function of the variance of market returns, thus Mr.

³⁸ Order 99-0120/99-0134 Consol., August 25, 1999, p. 54; Order 94-0065, January 9, 1995, pp. 92-93.

Bacalao created a mismatch between beta and the market index. The greater the variance of market returns, the lower the beta, all else equal. The historical standard deviation for large and small capitalization stock returns is 20.1% and 33.6%, respectively.^{39,40} Value line betas are regressed against the NYSE, which contains a much smaller proportion of small capitalization stocks. Thus, the standard deviation of the NYSE is likely to be lower than the standard deviation of a portfolio in which small capitalization stocks are equally weighted with large capitalization stocks. Third, a simple average of large and small company risk premiums over weights the latter since small company stocks account for less than 1% of the total market capitalization proportion of the NYSE and less than 3% of the total market as measured by the Wilshire 5000.⁴¹

Q. Does this conclude your direct testimony?

A. Yes.

³⁹ Standard deviation is the square root of variance.

⁴⁰ Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation, 2000 Yearbook*, p. 33.

⁴¹ Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation, 2000 Yearbook*, p. 140.

South Beloit Water, Gas & Electric Company

Weighted Average Cost of Capital

Company's Proposal

<u>Component</u>	<u>Balance</u>	<u>Percent of Total Capital</u>	<u>Cost</u>	<u>Weighted Cost</u>
Long-Term Debt	\$ 557,200,786	43.54%	7.69%	3.35%
Preferred Equity	\$ 59,963,000	4.69%	5.52%	0.26%
Common Equity	\$ 662,593,453	51.77%	13.50%	6.99%
Total	<u>\$ 1,279,757,239</u>	<u>100.0%</u>		<u>10.60%</u>

Staff's Proposal

<u>Component</u>	<u>Balance</u>	<u>Percent of Total Capital</u>	<u>Cost</u>	<u>Weighted Cost</u>
Long-Term Debt	\$ 556,264,543	43.49%	7.57%	3.29%
Preferred Equity	\$ 60,218,000	4.71%	5.50%	0.26%
Common Equity	\$ 662,593,453	51.80%	11.02%	5.71%
Total	<u>\$ 1,279,075,996</u>	<u>100.00%</u>		<u>9.26%</u>

**South Beloit Water, Gas & Electric Company
Embedded Cost of Debt**

12/31/2000 Series C1	Coupon C2	Date Issued C3	Maturity Date C4	Original Principal Amount C7	Face Amount Outstanding C8	Unamortized Balances Disc/(Prem) C9	Issue Exp. C10	Carrying Value C11
First Mortgage Bonds 1984 Series A	2.15%	8/15/1984	8/1/2014	\$ 8,500,000	\$8,500,000	\$38,485	\$82,613	\$8,378,902
First Mortgage Bonds 1988 Series A	2.65%	8/9/1988	8/1/2015	\$ 15,500,000	\$14,600,000	\$62,787	\$92,647	\$14,444,566
First Mortgage Bonds 1990 Series V	9.30%	12/17/1990	12/1/2025	\$ 50,000,000	\$27,000,000	\$723,296	\$458,991	\$25,817,713
First Mortgage Bonds 1991 Series A	2.70%	9/13/1991	9/1/2015	\$ 16,000,000	\$16,000,000		\$524,567	\$15,475,433
First Mortgage Bonds 1991 Series B	2.70%	9/13/1991	9/1/2005	\$ 16,000,000	\$16,000,000		\$163,520	\$15,836,480
First Mortgage Bonds 1992 Series W	8.60%	3/16/1992	3/15/2027	\$ 90,000,000	\$90,000,000	\$111,848	\$3,963,330	\$85,924,822
First Mortgage Bonds 1992 Series X	7.75%	6/1/1992	6/1/2004	\$ 62,000,000	\$62,000,000	\$65,319	\$958,258	\$60,976,423
First Mortgage Bonds 1992 Series Y	7.60%	7/7/1992	7/1/2005	\$ 72,000,000	\$72,000,000		\$1,363,559	\$70,636,441
Debentures 7% due 2007	7.00%	6/30/1997	6/15/2007	\$ 105,000,000	\$105,000,000	\$193,136	\$3,172,400	\$101,634,464
Debentures 5.7% due 2008	5.70%	10/30/1998	10/15/2008	\$ 60,000,000	\$60,000,000	\$40,654	\$1,536,069	\$58,423,277
Debentures 7 5/8% due 2010	7.63%	3/6/2000	3/1/2010	\$ 100,000,000	\$100,000,000	\$559,055	\$724,923	\$98,716,022
Total				\$595,000,000	\$571,100,000	\$1,794,580	\$13,040,877	\$556,264,543

Series C1	Annualized Coupon Int. C12	Annualized Amortization Disc/(Prem) C13	Annualized Issue Exp. C14	Annualized Int. Exp. C15
First Mortgage Bonds 1984 Series A	\$182,750	\$2,832	\$6,078	\$191,660
First Mortgage Bonds 1988 Series A	\$386,900	\$4,303	\$6,349	\$397,552
First Mortgage Bonds 1990 Series V	\$2,511,000	\$29,008	\$18,408	\$2,558,416
First Mortgage Bonds 1991 Series A	\$432,000	\$0	\$35,741	\$467,741
First Mortgage Bonds 1991 Series B	\$432,000	\$0	\$35,006	\$467,006
First Mortgage Bonds 1992 Series W	\$7,740,000	\$4,266	\$151,161	\$7,895,427
First Mortgage Bonds 1992 Series X	\$4,805,000	\$19,104	\$280,260	\$5,104,364
First Mortgage Bonds 1992 Series Y	\$5,472,000	\$0	\$302,921	\$5,774,921
Debentures 7% due 2007	\$7,350,000	\$29,909	\$491,271	\$7,871,180
Debentures 5.7% due 2008	\$3,420,000	\$5,216	\$197,070	\$3,622,286
Debentures 7 5/8% due 2010	\$7,625,000	\$60,967	\$79,055	\$7,765,022
Total	\$40,356,650	\$155,605	\$1,603,320	\$42,115,575

Embedded Cost

7.57%

**South Beloit Water, Gas & Electric Company
Embedded Cost of Preferred Stock**

Preferred Stock Issuance	Dividend Rate	Shares Outstanding	Balance Outstanding	Unamortized Premium	Discount	Total Balance	Annual Dividends	Amortization of Expense	Discount	Total
4.50% Dividend Series	4.50%	99,970	\$ 9,997,000			\$ 9,997,000	\$ 449,865			\$ 449,865
4.80% Dividend Series	4.80%	74,912	\$ 7,491,200	\$ 22,500		\$ 7,513,700	\$ 359,578			\$ 359,578
4.96% Dividend Series	4.96%	64,979	\$ 6,497,900			\$ 6,497,900	\$ 322,296			\$ 322,296
4.40% Dividend Series	4.40%	29,957	\$ 2,995,700	\$ 82,500		\$ 3,078,200	\$ 131,811			\$ 131,811
4.76% Dividend Series	4.76%	29,947	\$ 2,994,700			\$ 2,994,700	\$ 142,548			\$ 142,548
6.20% Dividend Series	6.20%	150,000	\$ 15,000,000	\$ 150,000		\$ 15,150,000	\$ 930,000			\$ 930,000
6.50% Dividend Series	6.50%	599,460	\$ 14,986,500			\$ 14,986,500	\$ 974,123			\$ 974,123
Total Preferred Stock		1,049,225	\$ 59,963,000	\$ 255,000		\$ 60,218,000	\$ 3,310,219			\$ 3,310,219

Embedded Cost of Preferred Stock 5.50%

**South Beloit Water, Gas & Electric Company
Growth Rates**

Electric Sample

<u>Company</u>	<u>Zacks Earnings</u>	<u>IBES Earnings</u>	<u>Average</u>
1 Allegheny Energy	9.11%	9.46%	9.29%
2 Ameren Corp.	4.00%	4.86%	4.43%
3 Consolidated Edison	3.93%	4.26%	4.10%
4 FPL Group	7.12%	6.75%	6.94%
5 Idacorp	10.00%	7.50%	8.75%
6 Nstar	6.40%	6.67%	6.54%

Gas Sample

<u>Company</u>	<u>Zacks Earnings</u>	<u>IBES Earnings</u>	<u>Average</u>
1 Laclede Gas Company	7.50%	3.00%	5.25%
2 Nicor	6.38%	5.90%	6.14%
3 Northwest Natural Gas	6.25%	4.64%	5.45%
4 Peoples Energy Corporation	6.80%	5.57%	6.19%
5 Piedmont Natural Gas Company	6.75%	4.75%	5.75%
6 WGL Holding Company	5.88%	4.40%	5.14%

South Beloit Water, Gas & Electric Company

Electric Sample

Company	Current Dividend				Next Dividend Payment Date	Stock Price
	D _{0,1}	D _{0,2}	D _{0,3}	D _{0,4}		
1 Allegheny Energy	\$ 0.430	\$ 0.430	\$0.430	\$0.430	12/28/2001	\$ 37.080
2 Ameren Corp.	0.635	0.635	0.635	0.635	12/28/2001	\$ 41.110
3 Consolidated Edison	0.550	0.550	0.550	0.550	3/15/2002	\$ 39.600
4 FPL Group	0.540	0.560	0.560	0.560	12/17/2001	\$ 55.010
5 Idacorp	0.465	0.465	0.465	0.465	2/28/2002	\$ 38.360
6 Nstar	0.515	0.515	0.515	0.515	2/1/2002	\$ 43.220

Gas Sample

Company	Current Dividend				Next Dividend Payment Date	Stock Price
	D _{0,1}	D _{0,2}	D _{0,3}	D _{0,4}		
1 Laclede Gas Company	-	0.335	0.335	0.335	1/2/2002	24.400
2 Nicor	0.415	0.440	0.440	0.440	2/1/2002	38.680
3 Northwest Natural Gas	0.310	0.310	0.310	0.315	2/15/2002	24.360
4 Peoples Energy Corporation	0.500	0.510	0.510	0.510	1/15/2002	39.160
5 Piedmont Natural Gas Company	0.365	0.385	0.385	0.385	1/15/2002	33.330
6 WGL Holding Company	0.310	0.315	0.315	0.315	2/1/2002	27.800

**South Beloit Water, Gas & Electric Company
Expected Quarterly Dividends**

Electric Sample

Company	D _{1,1}	D _{1,2}	D _{1,3}	D _{1,4}
Allegheny Energy	\$ 0.470	\$ 0.470	\$ 0.470	\$ 0.470
Ameren Corp.	0.635	0.663	0.663	0.663
Consolidated Edison	0.573	0.573	0.573	0.573
FPL Group	0.560	0.599	0.599	0.599
Idacorp	0.506	0.506	0.506	0.506
Nstar	0.549	0.549	0.549	0.549

Gas Sample

Company	D _{1,1}	D _{1,2}	D _{1,3}	D _{1,4}
Laclede Gas Company	0.335	0.353	0.353	0.353
Nicor	0.440	0.467	0.467	0.467
Northwest Natural Gas	0.315	0.315	0.315	0.332
Peoples Energy Corporation	0.510	0.542	0.542	0.542
Piedmont Natural Gas Company	0.385	0.407	0.407	0.407
WGL Holding Company	0.315	0.331	0.331	0.331

South Beloit Water, Gas & Electric Company
DCF- Cost of Common Equity Estimate

Electric Sample

	<u>Company</u>	<u>Cost of Equity Estimate</u>
1	Allegheny Energy	14.72%
2	Ameren Corp.	11.16%
3	Consolidated Edison	10.04%
4	FPL Group	11.47%
5	Idacorp	14.27%
6	Nstar	11.85%
	Average	12.25%

Gas Sample

	<u>Company</u>	<u>Cost of Equity Estimate</u>
1	Laclede Gas Company	11.26%
2	Nicor	11.11%
3	Northwest Natural Gas	10.89%
4	Peoples Energy Corporation	11.92%
5	Piedmont Natural Gas Company	10.80%
6	WGL Holding Company	10.03%
	Average	11.00%

**South Beloit Water, Gas & Electric Company
Risk Premium Analysis**

Interest Rates as of November 14, 2001

U.S. Treasury Bills		U.S. Treasury Bonds	
Discount Rate	Effective Yield	Bond Equivalent Yield	Effective Yield
1.84%	1.89%	5.02%	5.08%

Risk Premium Cost of Equity Estimates

Risk-Free Rate Proxy is the U.S. Treasury Bond

Electric Sample

Risk-Free Rate		Beta		Risk Premium		Cost of Common Equity
5.08%	+	0.51	*	(15.30% - 5.08%)	=	10.28%

Gas Sample

Risk-Free Rate		Beta		Risk Premium		Cost of Common Equity
5.08%	+	0.58	*	(15.30% - 5.08%)	=	11.04%

**South Beloit Water, Gas & Electric Company
Risk Comparison**

Electric Sample

<u>Company</u>	<u>S&P Rating</u>	<u>S&P Business Position</u>
1 Allegheny Energy Inc.	A	5
2 Ameren Corp.	A+	5
3 Consolidated Edison	A	5
4 FPL Group	A	6
5 Idacorp	A+	5
6 Nstar	A	3
Average	A	4.83

Gas Sample

<u>Company</u>	<u>S&P Rating</u>	<u>S&P Business Position</u>
1 Laclede Gas Company	AA-	3
2 Nicor	AA	3
3 Northwest Natural Gas	A	3
4 Peoples Energy Corporation	A+	4
5 Piedmont Natural Gas Company	A	3
6 WGL Holdings Inc.	AA-	3
Average	A+/AA-	3.17

Wisconsin Power and Light Co.	AA-	3
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